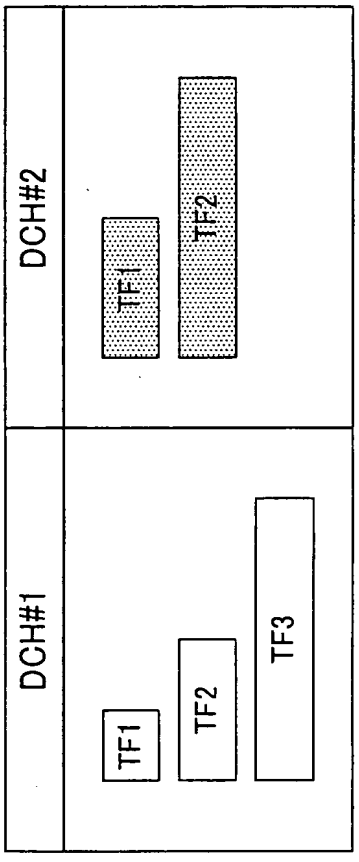
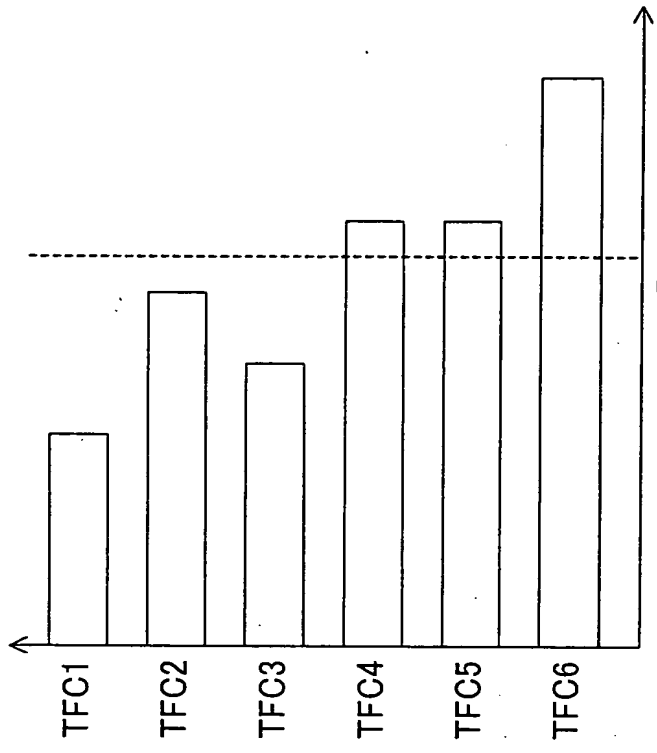


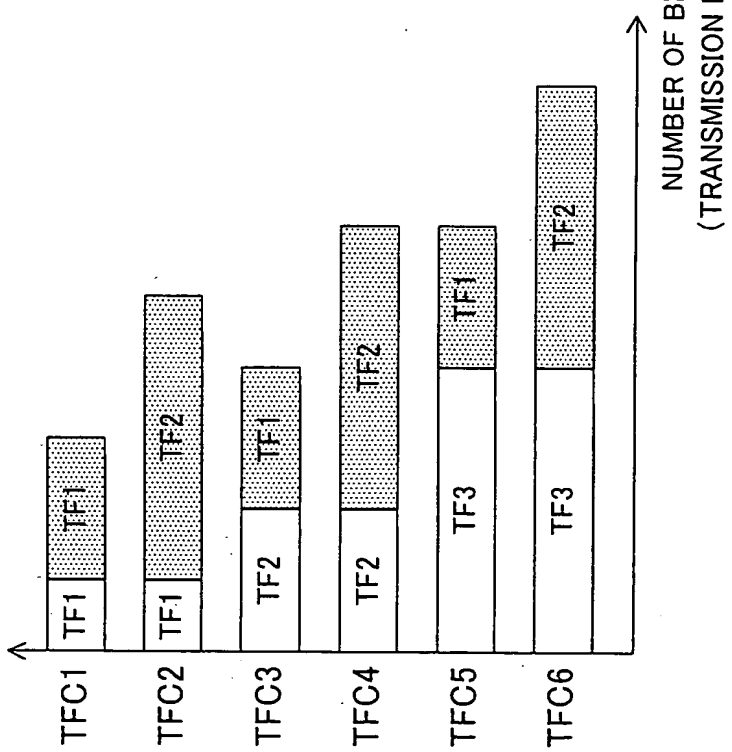
(PRIOR ART)

FIG.1A



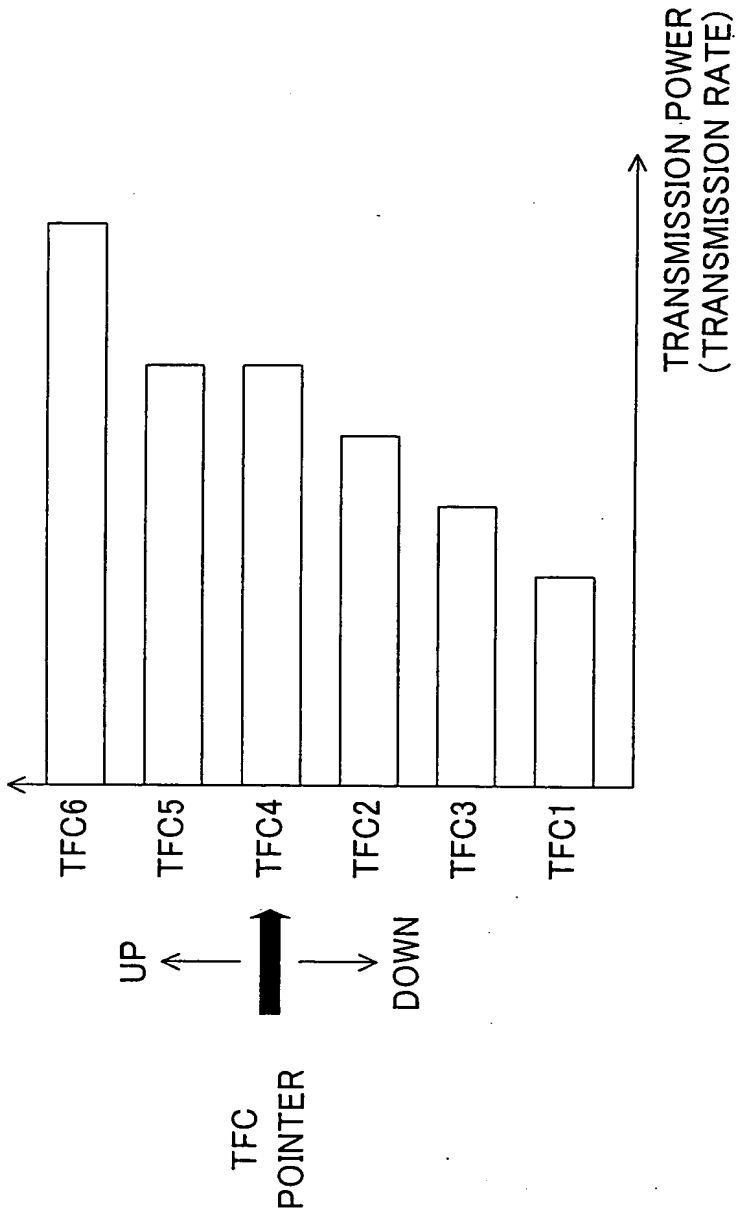
(PRIOR ART)

FIG.1C



(PRIOR ART)

FIG.1B



(PRIOR ART)

FIG.2

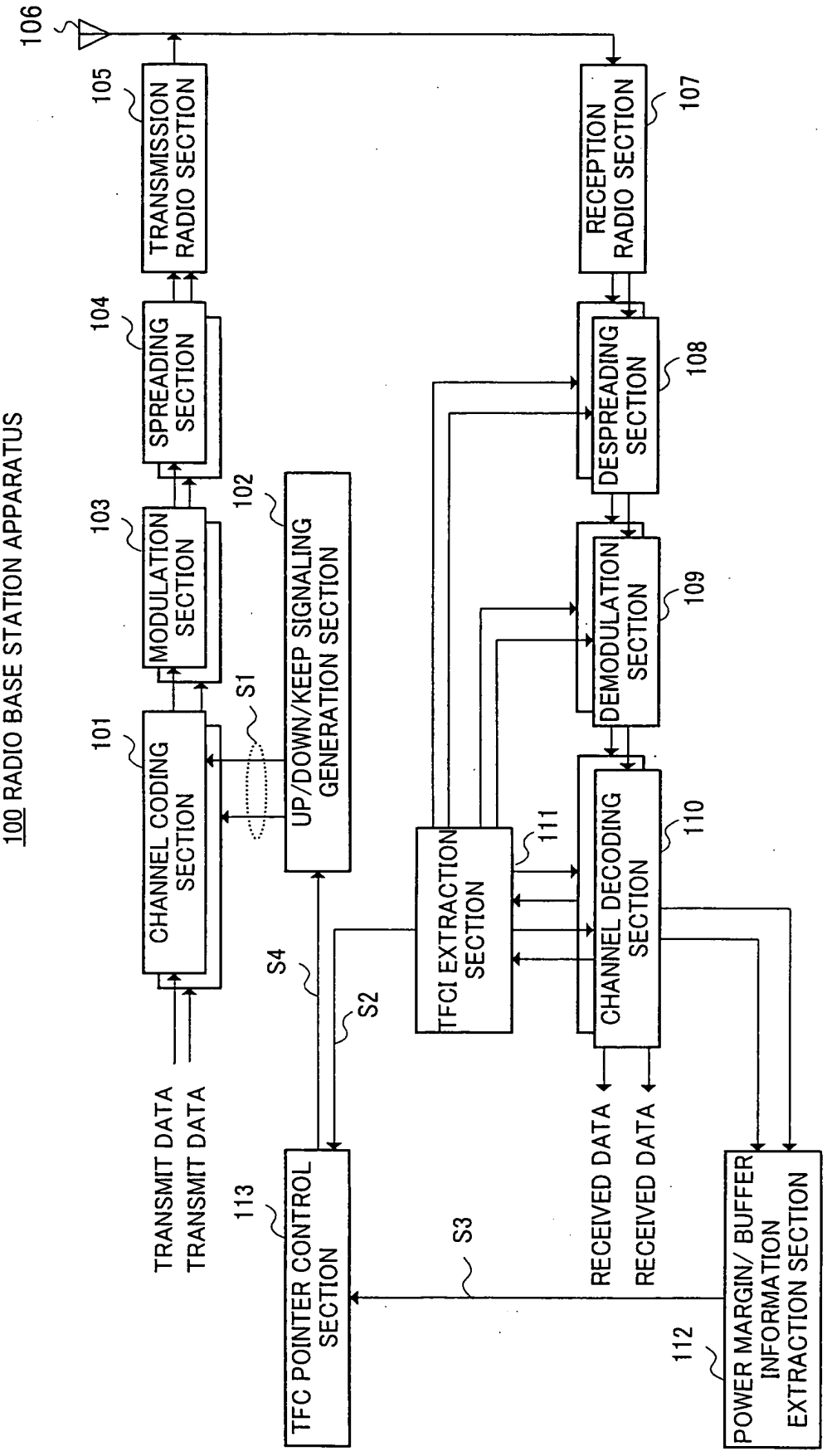

100 RADIO BASE STATION APPARATUS
106
105
TRANSMISSION RADIO SECTION
104
SPREADING SECTION
103
MODULATION SECTION
102
UP/DOWN/KEEP SIGNALING GENERATION SECTION
101
CHANNEL CODING SECTION
S1
S4
S2
TRANSMIT DATA
TRANSMIT DATA
113
TFC POINTER CONTROL SECTION
S3
TFCI EXTRACTION SECTION
111
107
RECEPTION RADIO SECTION
108
DESPREADING SECTION
109
DEMODULATION SECTION
110
CHANNEL DECODING SECTION
RECEIVED DATA
RECEIVED DATA
112
POWER MARGIN/ BUFFER INFORMATION EXTRACTION SECTION

FIG.3

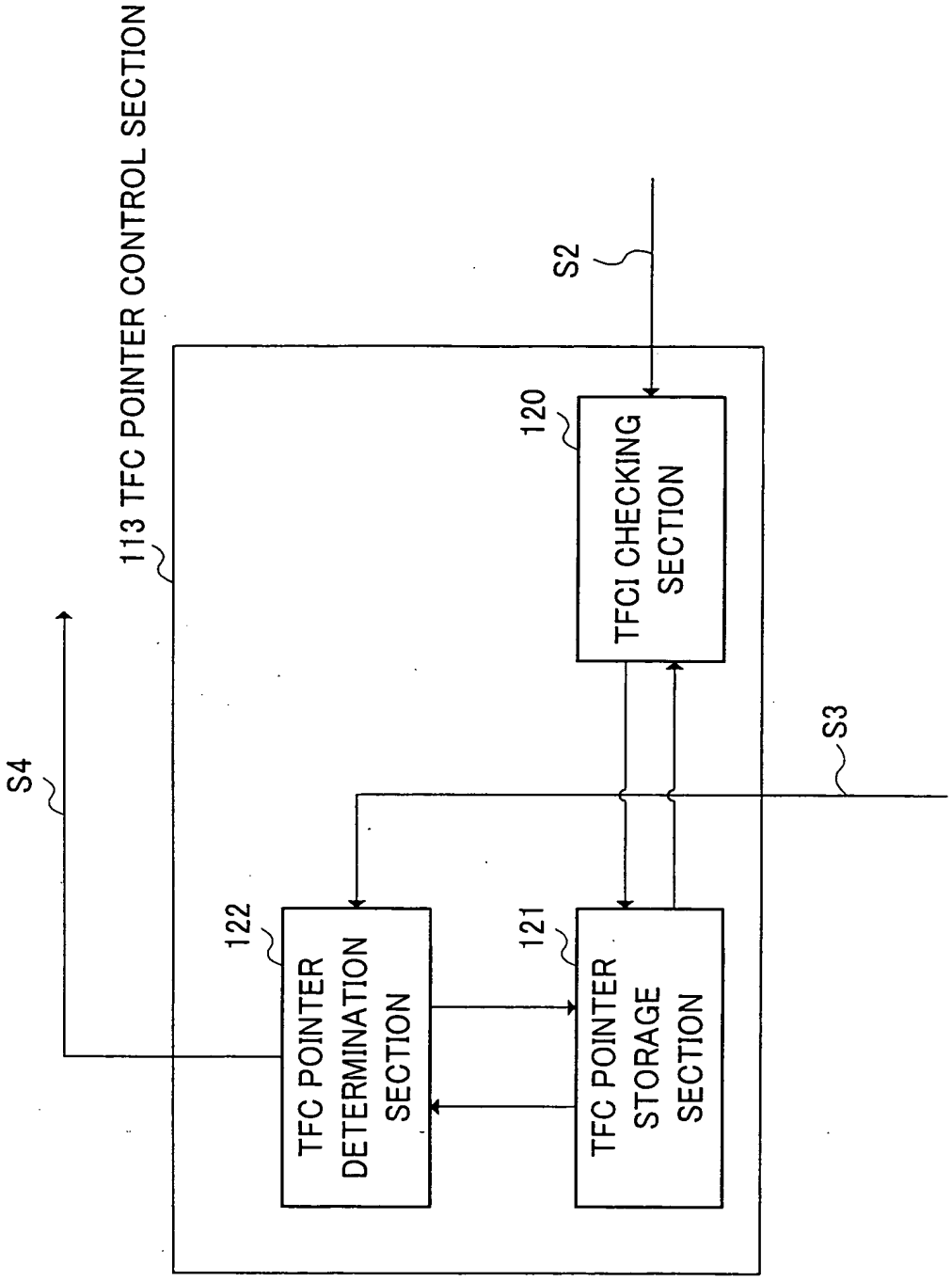

113 TFC POINTER CONTROL SECTION
S2
120
TFCI CHECKING SECTION
S3
S4
122
TFC POINTER DETERMINATION SECTION
121
TFC POINTER STORAGE SECTION

FIG.4

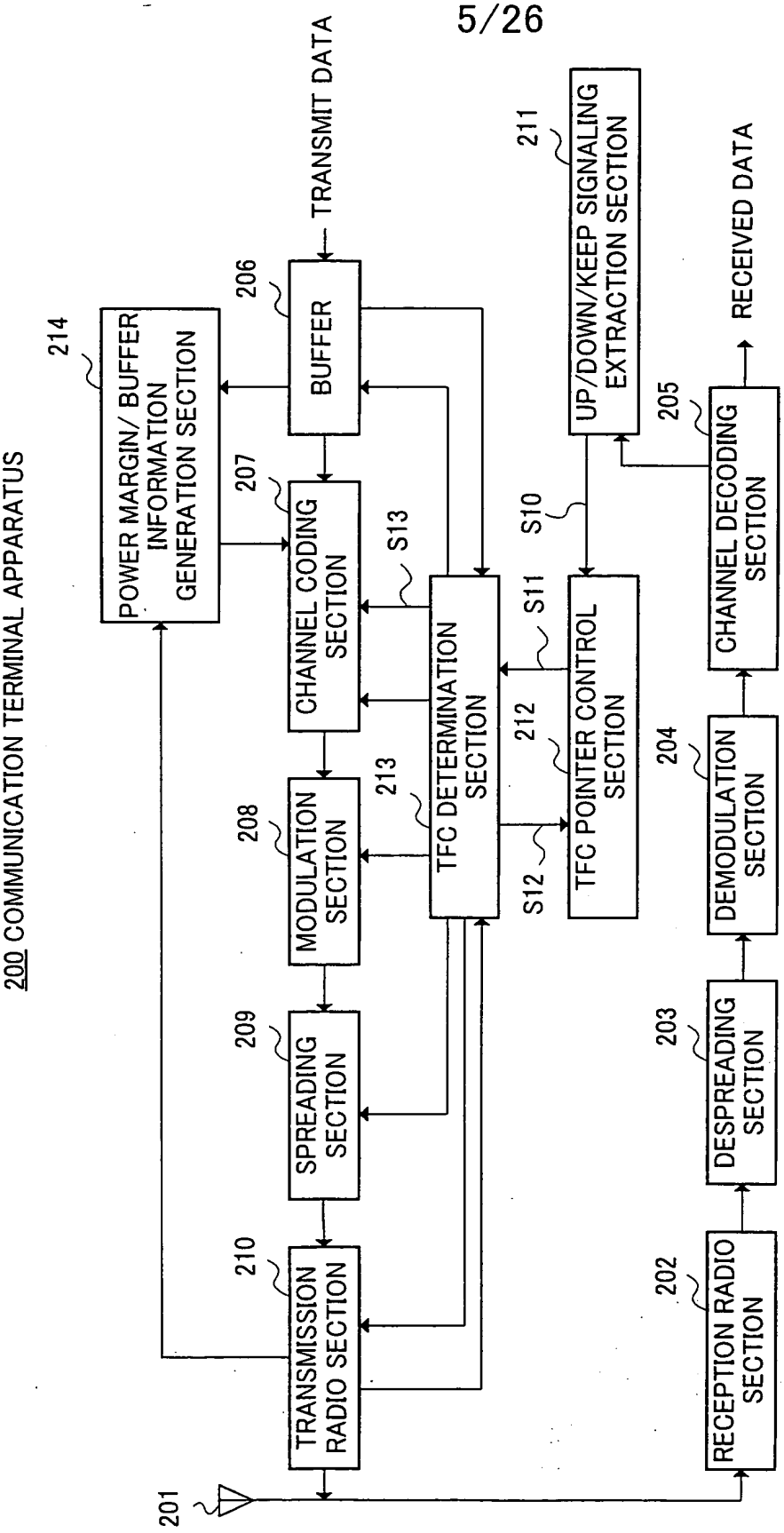

200 COMMUNICATION TERMINAL APPARATUS
TRANSMIT DATA
RECEIVED DATA
214
POWER MARGIN/ BUFFER INFORMATION GENERATION SECTION
206
BUFFER
207
CHANNEL CODING SECTION
208
MODULATION SECTION
209
SPREADING SECTION
210
TRANSMISSION RADIO SECTION
201
S13
213
TFC DETERMINATION SECTION
S12
S11
212
TFC POINTER CONTROL SECTION
S10
211
UP/DOWN/KEEP SIGNALING EXTRACTION SECTION
205
CHANNEL DECODING SECTION
204
DEMODULATION SECTION
203
DESPREADING SECTION
202
RECEPTION RADIO SECTION

FIG.5

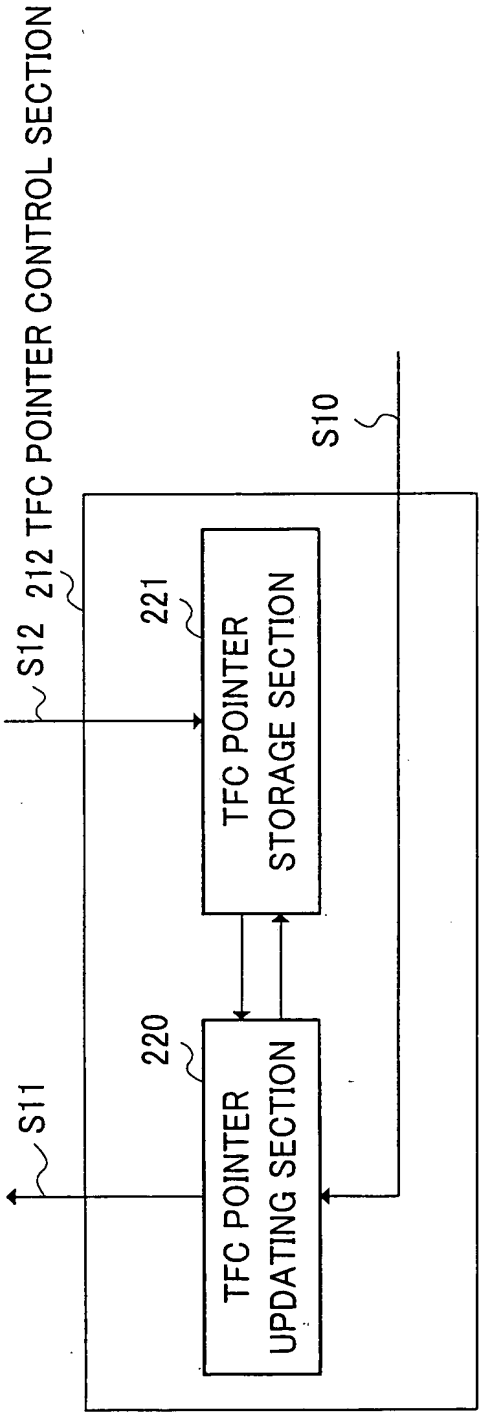

212 TFC POINTER CONTROL SECTION
S10
S12
221
TFC POINTER STORAGE SECTION
220
S11
TFC POINTER UPDATING SECTION

FIG.6

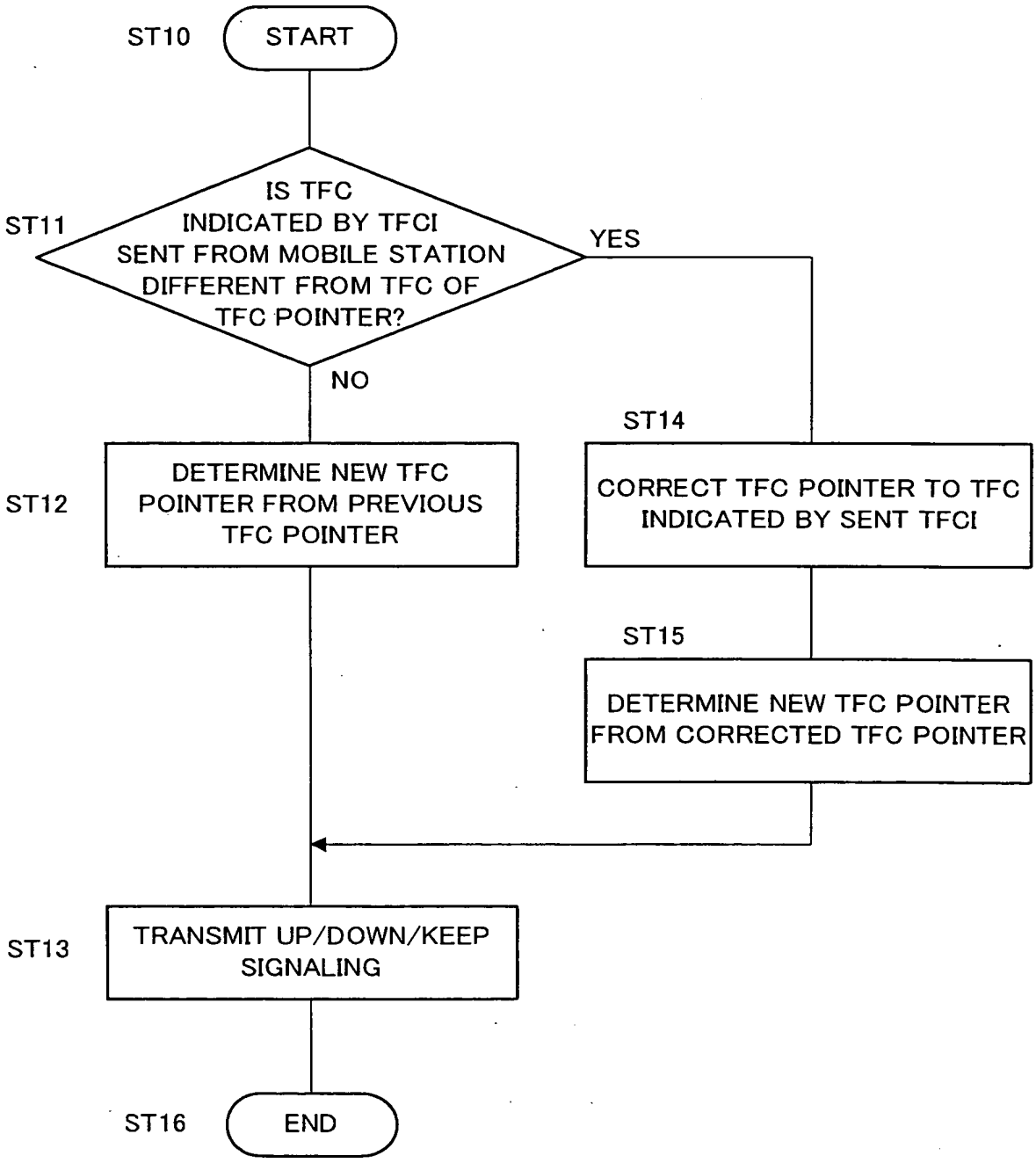

ST10
START
ST11
IS TFC INDICATED BY TFCI SENT FROM MOBILE STATION DIFFERENT FROM TFC OF TFC POINTER?
YES
NO
ST12
DETERMINE NEW TFC POINTER FROM PREVIOUS TFC POINTER
ST14
CORRECT TFC POINTER TO TFC INDICATED BY SENT TFCI
ST15
DETERMINE NEW TFC POINTER FROM CORRECTED TFC POINTER
ST13
TRANSMIT UP/DOWN/KEEP SIGNALING
ST16
END

FIG.7

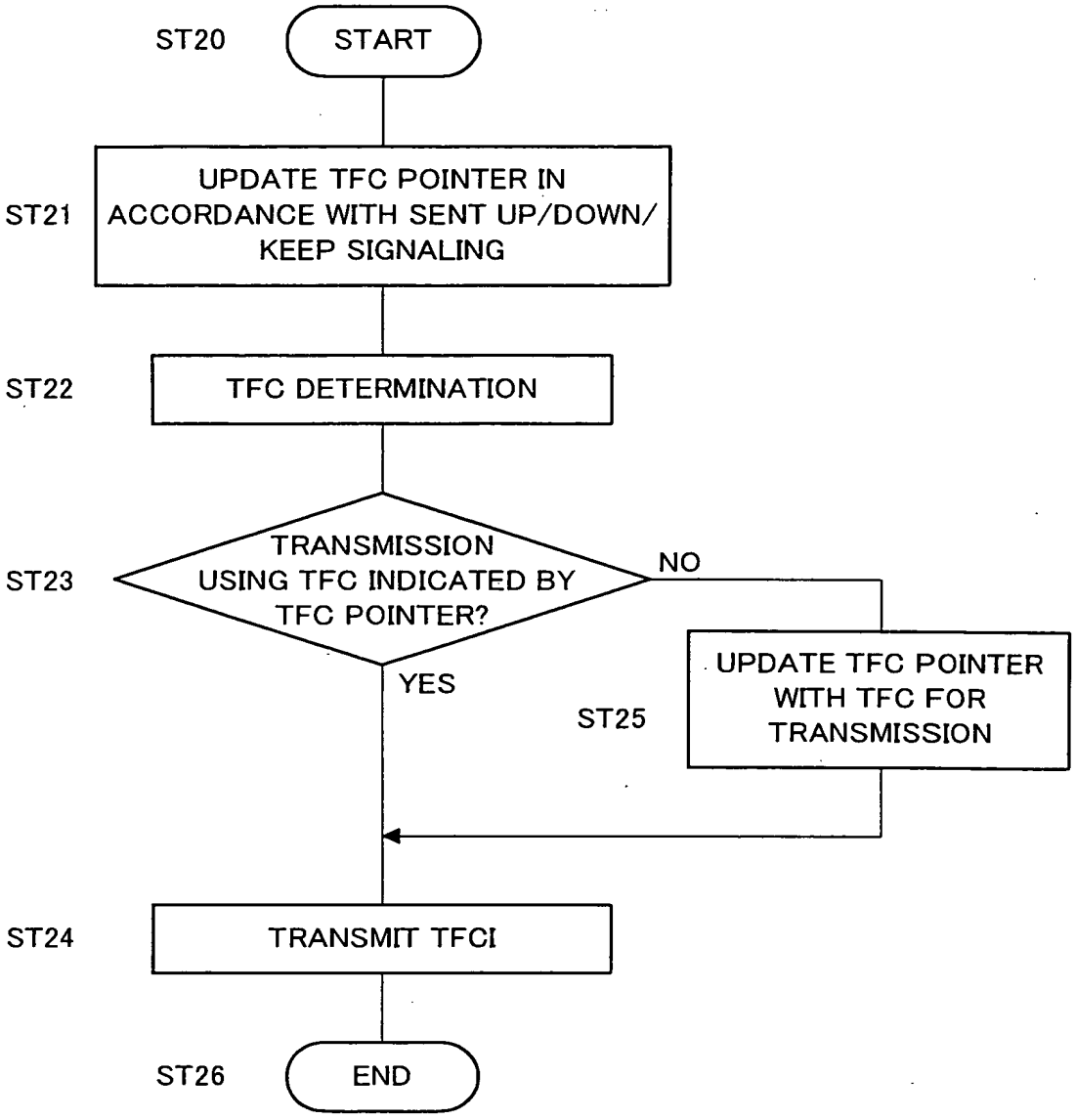

ST20
START
ST21
UPDATE TFC POINTER IN ACCORDANCE WITH SENT UP/DOWN/ KEEP SIGNALING
ST22
TFC DETERMINATION
ST23
TRANSMISSION USING TFC INDICATED BY TFC POINTER?
NO
YES
ST25
UPDATE TFC POINTER WITH TFC FOR TRANSMISSION
ST24
TRANSMIT TFCI
ST26
END

FIG.8

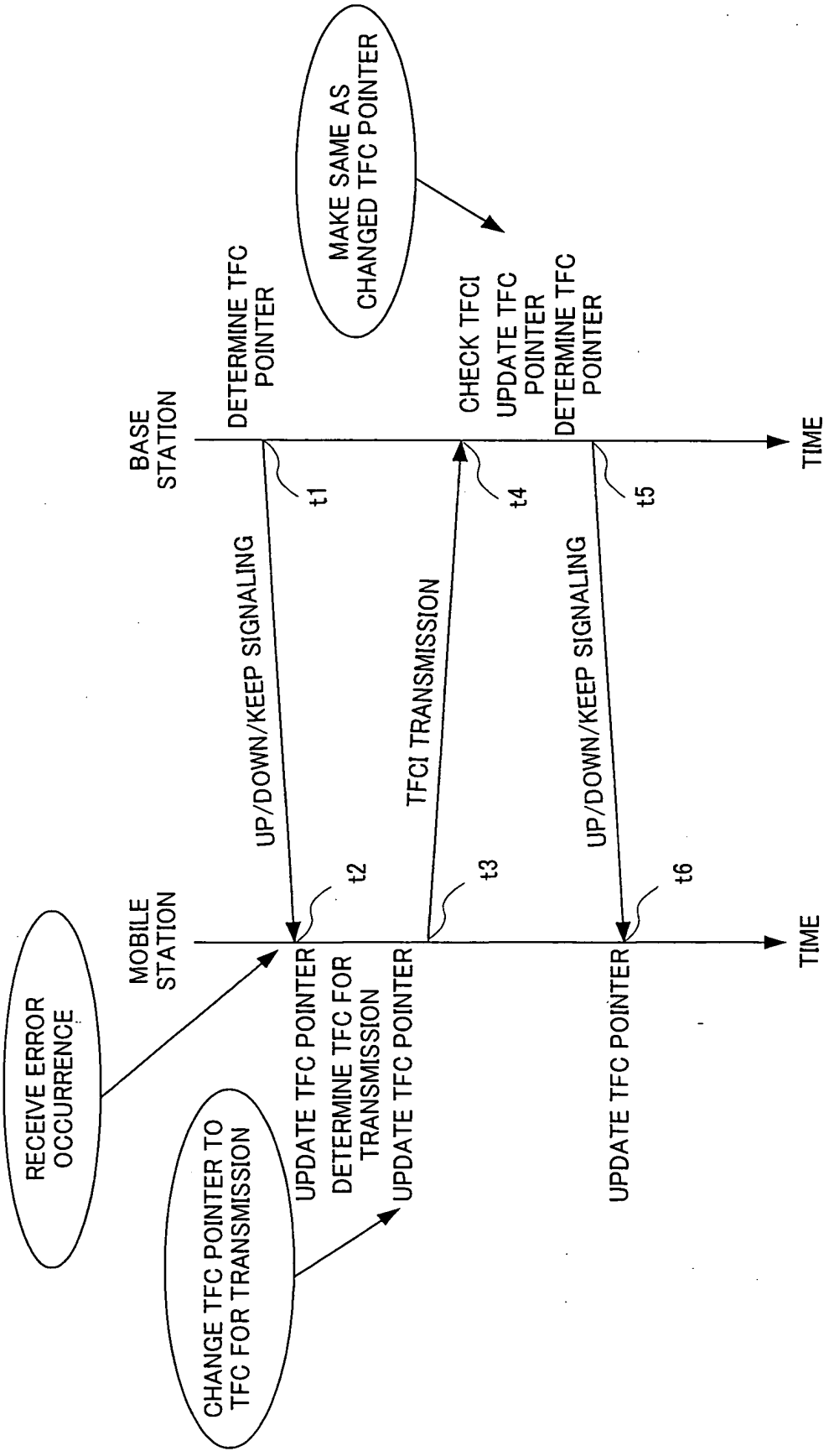

BASE STATION
MOBILE STATION
DETERMINE TFC POINTER
MAKE SAME AS CHANGED TFC POINTER
CHECK TFCI
UPDATE TFC POINTER
DETERMINE TFC POINTER
TIME
t1
t2
t3
t4
t5
t6
UP/DOWN/KEEP SIGNALING
TFCI TRANSMISSION
UP/DOWN/KEEP SIGNALING
RECEIVE ERROR OCCURRENCE
CHANGE TFC POINTER TO TFC FOR TRANSMISSION
UPDATE TFC POINTER
DETERMINE TFC FOR TRANSMISSION
UPDATE TFC POINTER
UPDATE TFC POINTER
TIME

FIG.9

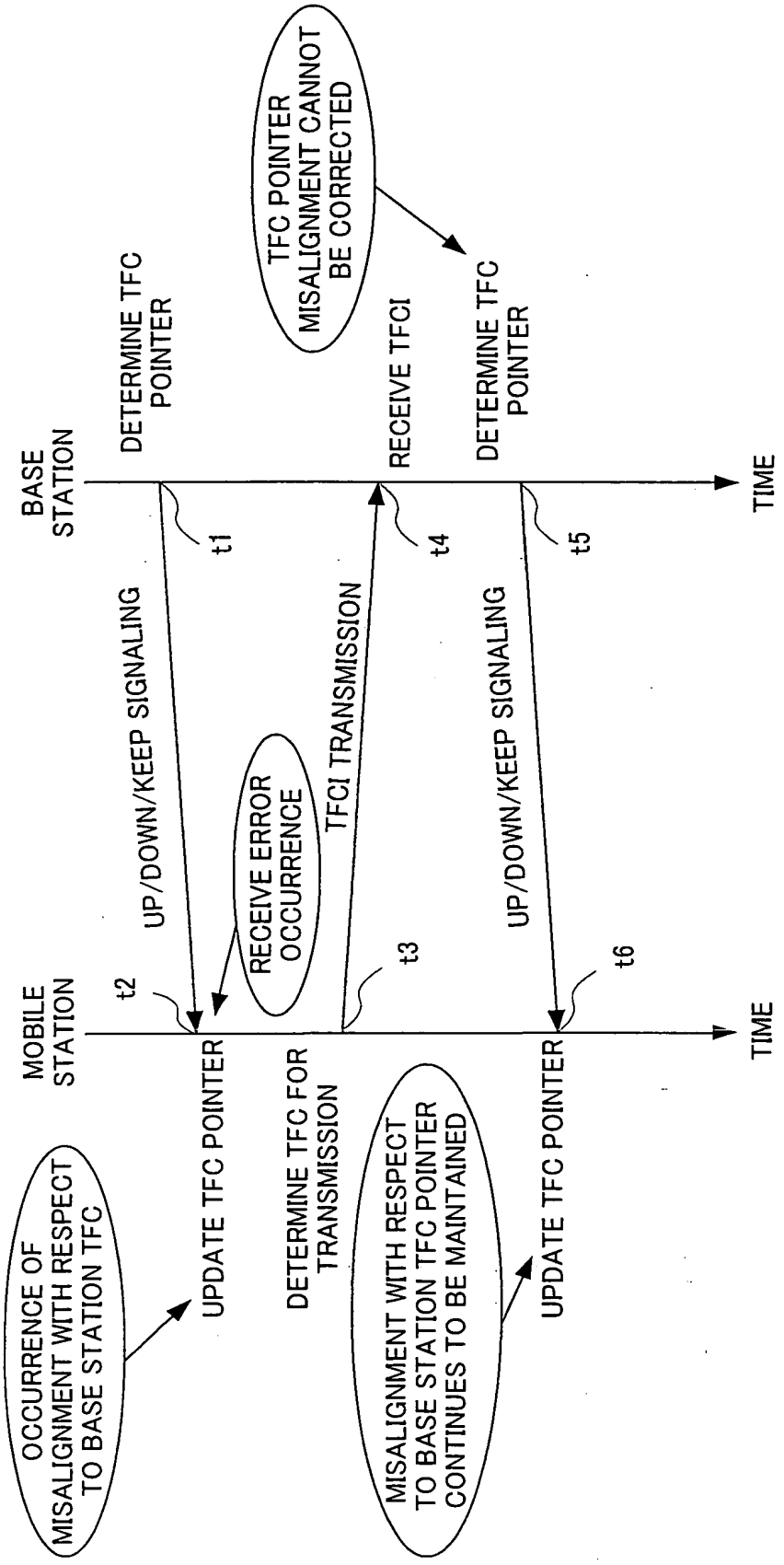

BASE STATION
DETERMINE TFC POINTER
TFC POINTER MISALIGNMENT CANNOT BE CORRECTED
RECEIVE TFCI
DETERMINE TFC POINTER
TIME
t1
t4
t5
UP/DOWN/KEEP SIGNALING
RECEIVE ERROR OCCURRENCE
TFCI TRANSMISSION
UP/DOWN/KEEP SIGNALING
t2
t3
t6
MOBILE STATION
TIME
OCCURRENCE OF MISALIGNMENT WITH RESPECT TO BASE STATION TFC
UPDATE TFC POINTER
DETERMINE TFC FOR TRANSMISSION
MISALIGNMENT WITH RESPECT TO BASE STATION TFC POINTER CONTINUES TO BE MAINTAINED
UPDATE TFC POINTER

FIG.10

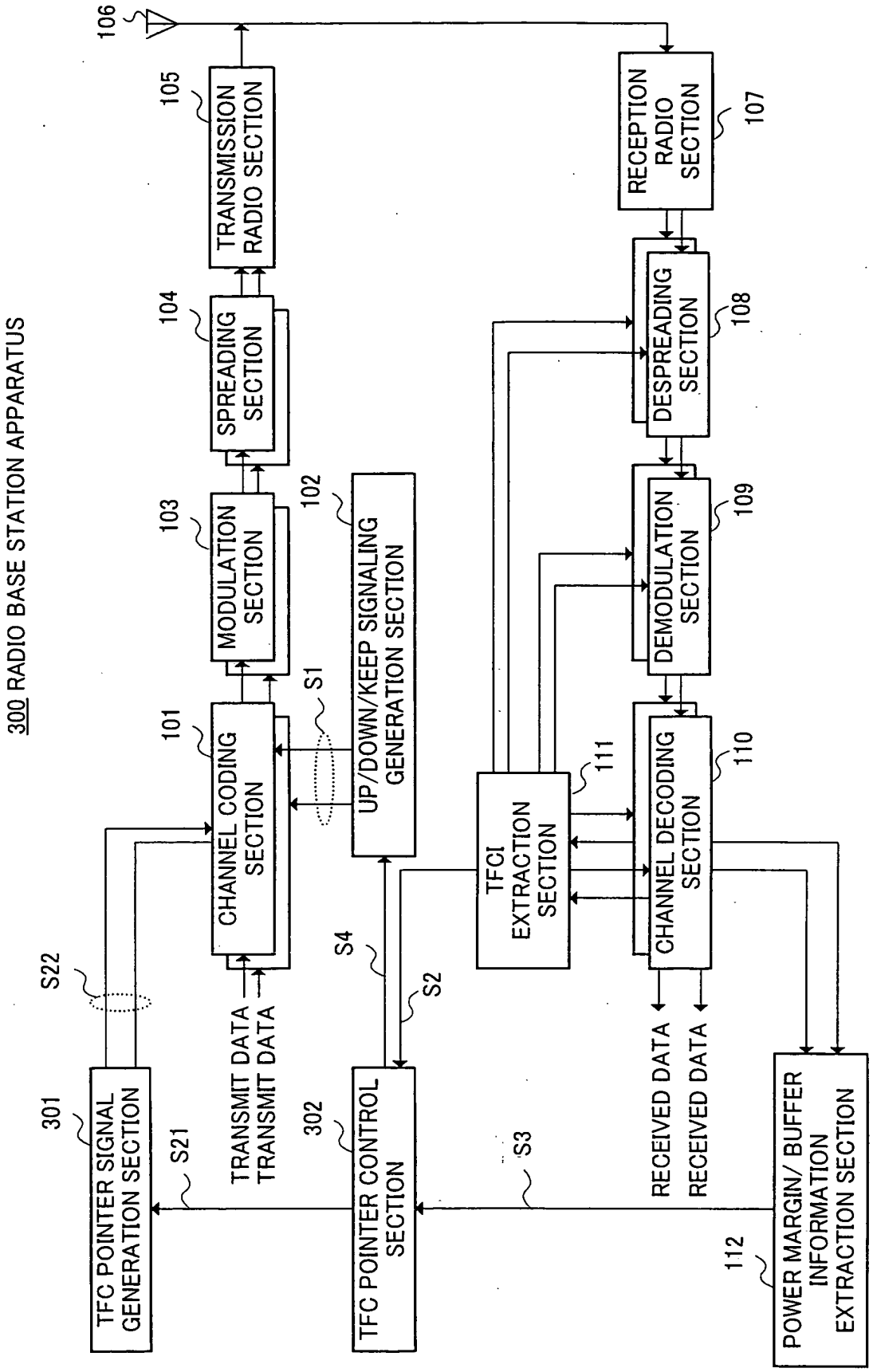

300 RADIO BASE STATION APPARATUS
106
105
TRANSMISSION RADIO SECTION
104
SPREADING SECTION
103
MODULATION SECTION
102
UP/DOWN/KEEP SIGNALING GENERATION SECTION
101
CHANNEL CODING SECTION
S1
S22
S4
S2
TRANSMIT DATA
TRANSMIT DATA
301
TFC POINTER SIGNAL GENERATION SECTION
S21
302
TFC POINTER CONTROL SECTION
S3
RECEPTION RADIO SECTION
107
DESPREADING SECTION
108
DEMODULATION SECTION
109
CHANNEL DECODING SECTION
110
111
TFCI EXTRACTION SECTION
RECEIVED DATA
RECEIVED DATA
112
POWER MARGIN/ BUFFER INFORMATION EXTRACTION SECTION

FIG.11

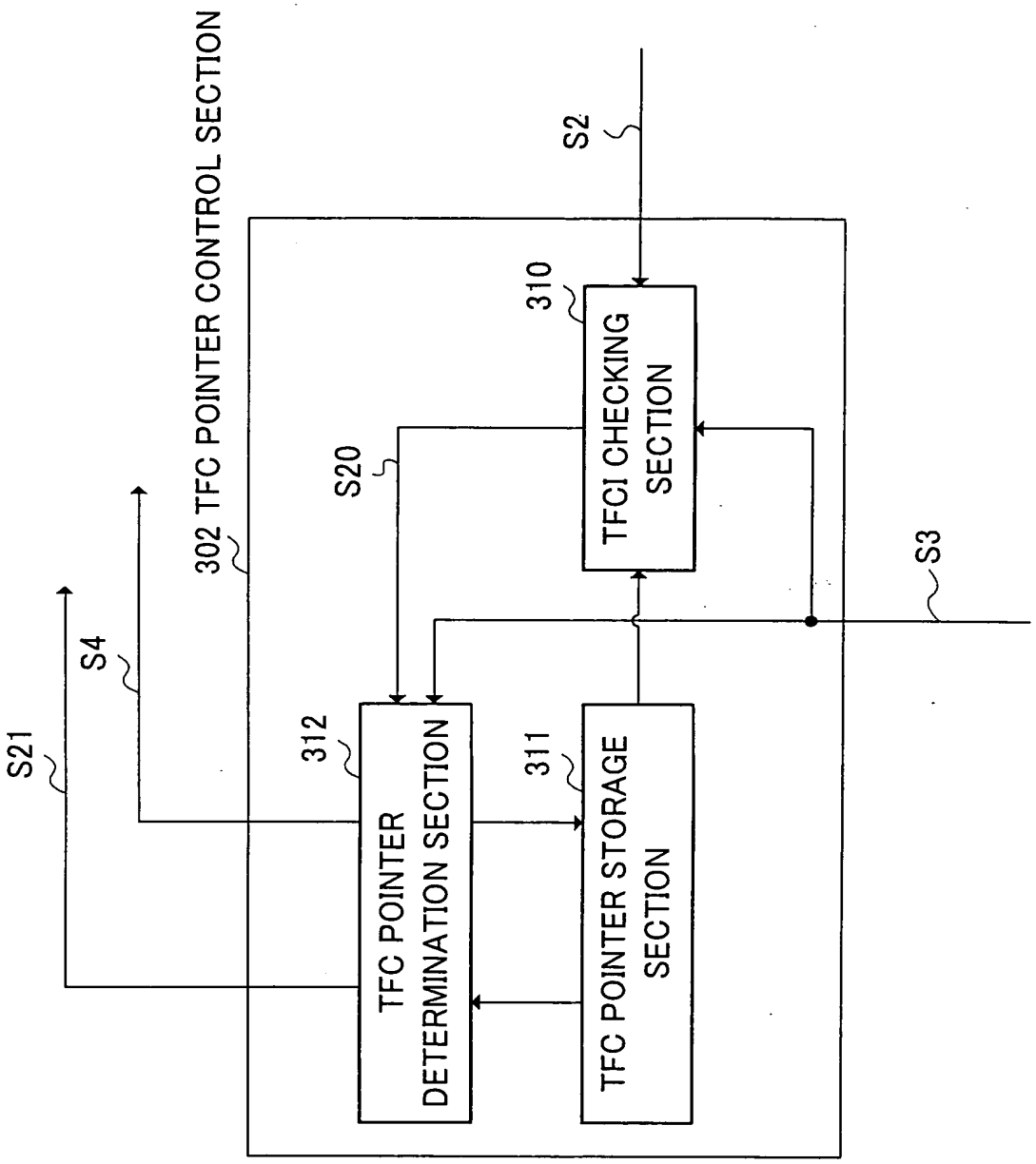

302 TFC POINTER CONTROL SECTION
S2
310
TFCI CHECKING SECTION
S20
S3
S4
S21
312
TFC POINTER DETERMINATION SECTION
311
TFC POINTER STORAGE SECTION

FIG.12

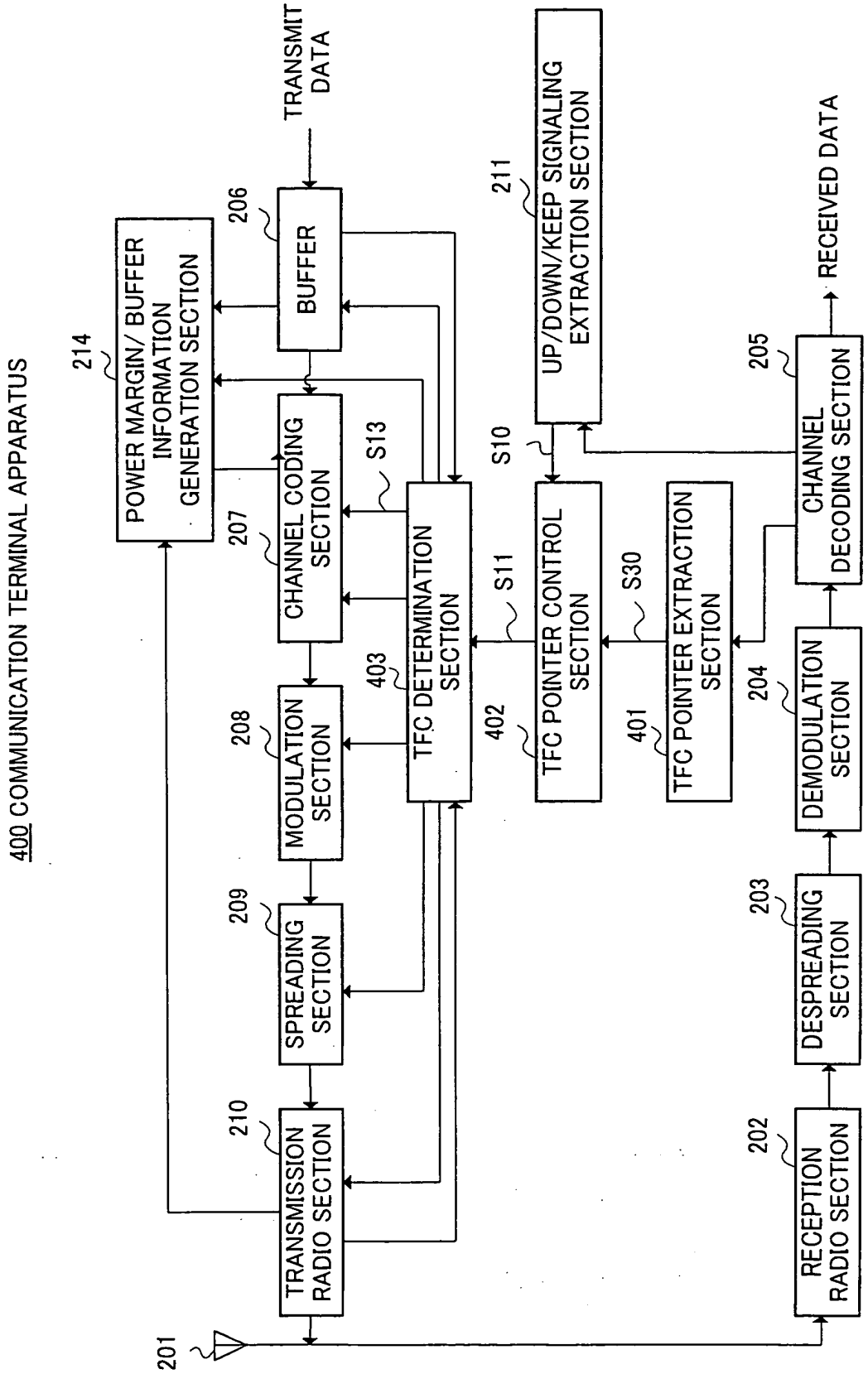

400 COMMUNICATION TERMINAL APPARATUS
TRANSMIT DATA
RECEIVED DATA
201
TRANSMISSION RADIO SECTION
210
RECEPTION RADIO SECTION
202
SPREADING SECTION
209
DESPREADING SECTION
203
MODULATION SECTION
208
DEMODULATION SECTION
204
TFC DETERMINATION SECTION
403
TFC POINTER CONTROL SECTION
402
TFC POINTER EXTRACTION SECTION
401
CHANNEL CODING SECTION
207
CHANNEL DECODING SECTION
205
POWER MARGIN/ BUFFER INFORMATION GENERATION SECTION
214
BUFFER
206
UP/DOWN/KEEP SIGNALING EXTRACTION SECTION
211
S10
S11
S13
S30

FIG.13

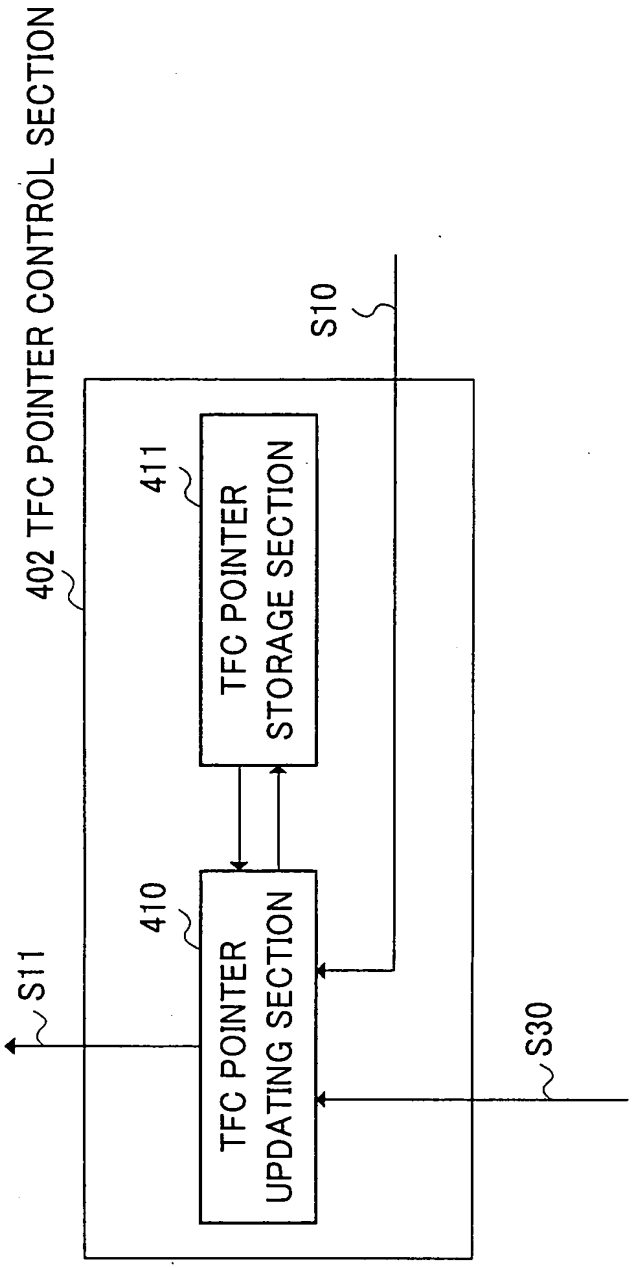

402 TFC POINTER CONTROL SECTION
S10
411
TFC POINTER STORAGE SECTION
410
TFC POINTER UPDATING SECTION
S11
S30

FIG.14

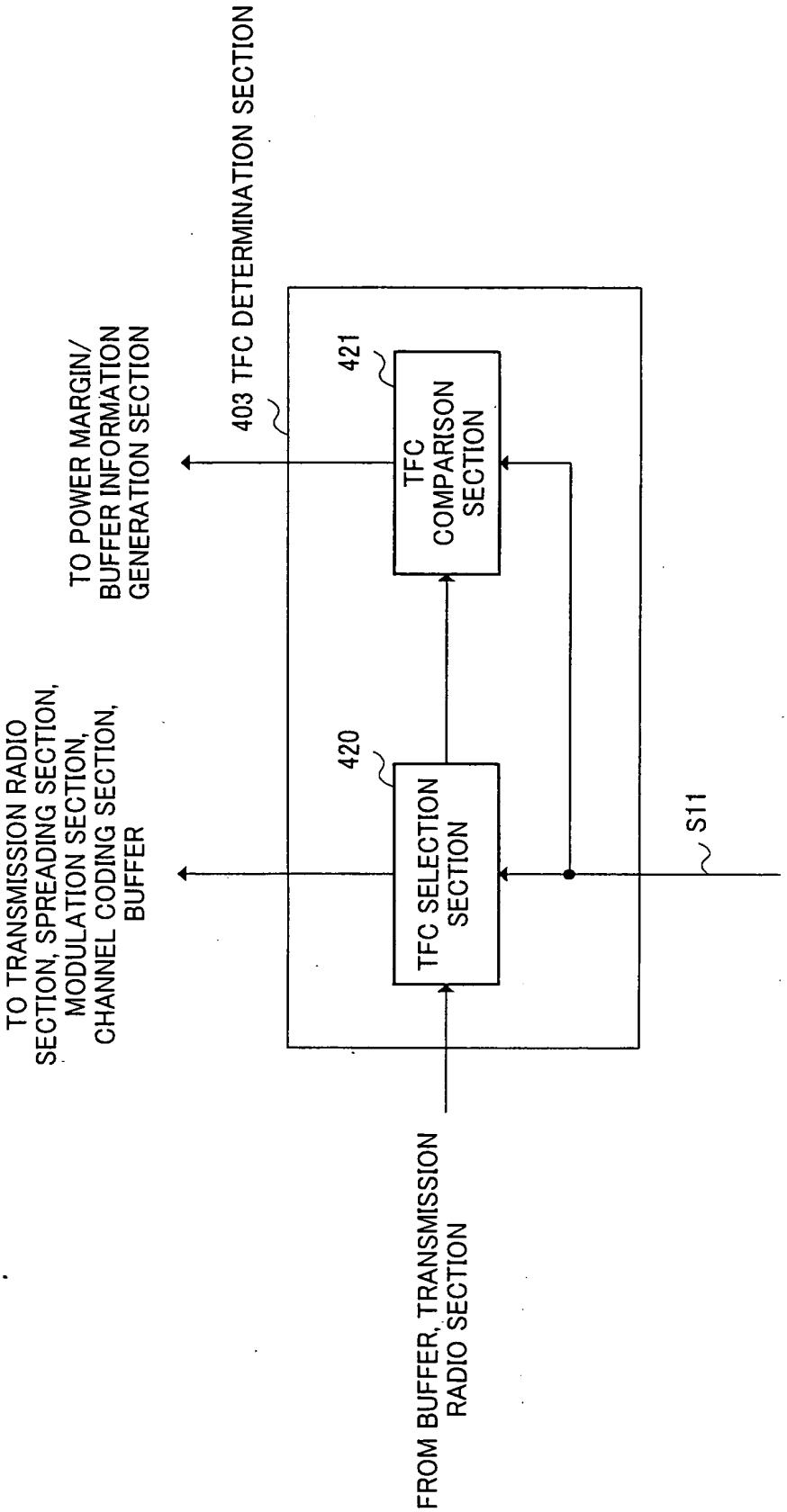

403 TFC DETERMINATION SECTION
TO POWER MARGIN/
BUFFER INFORMATION
GENERATION SECTION
421
TFC
COMPARISON
SECTION
TO TRANSMISSION RADIO
SECTION, SPREADING SECTION,
MODULATION SECTION,
CHANNEL CODING SECTION,
BUFFER
420
TFC SELECTION
SECTION
S11
FROM BUFFER, TRANSMISSION
RADIO SECTION

FIG.15

FIG.16A

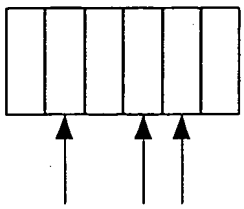


FIG.16B

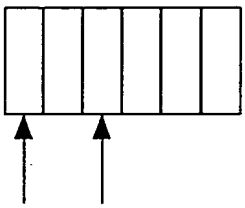


FIG.16C

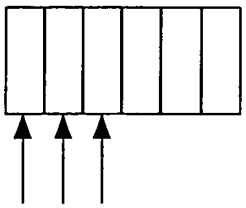


FIG.16D

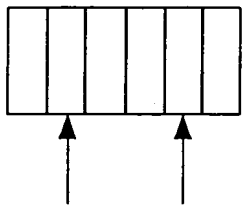


FIG.17A

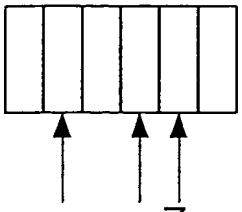


FIG.17B

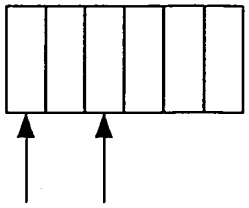


FIG.17C

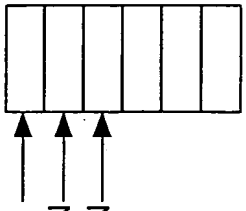
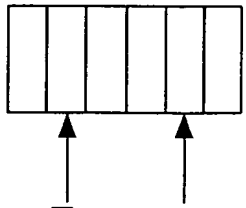


FIG.17D



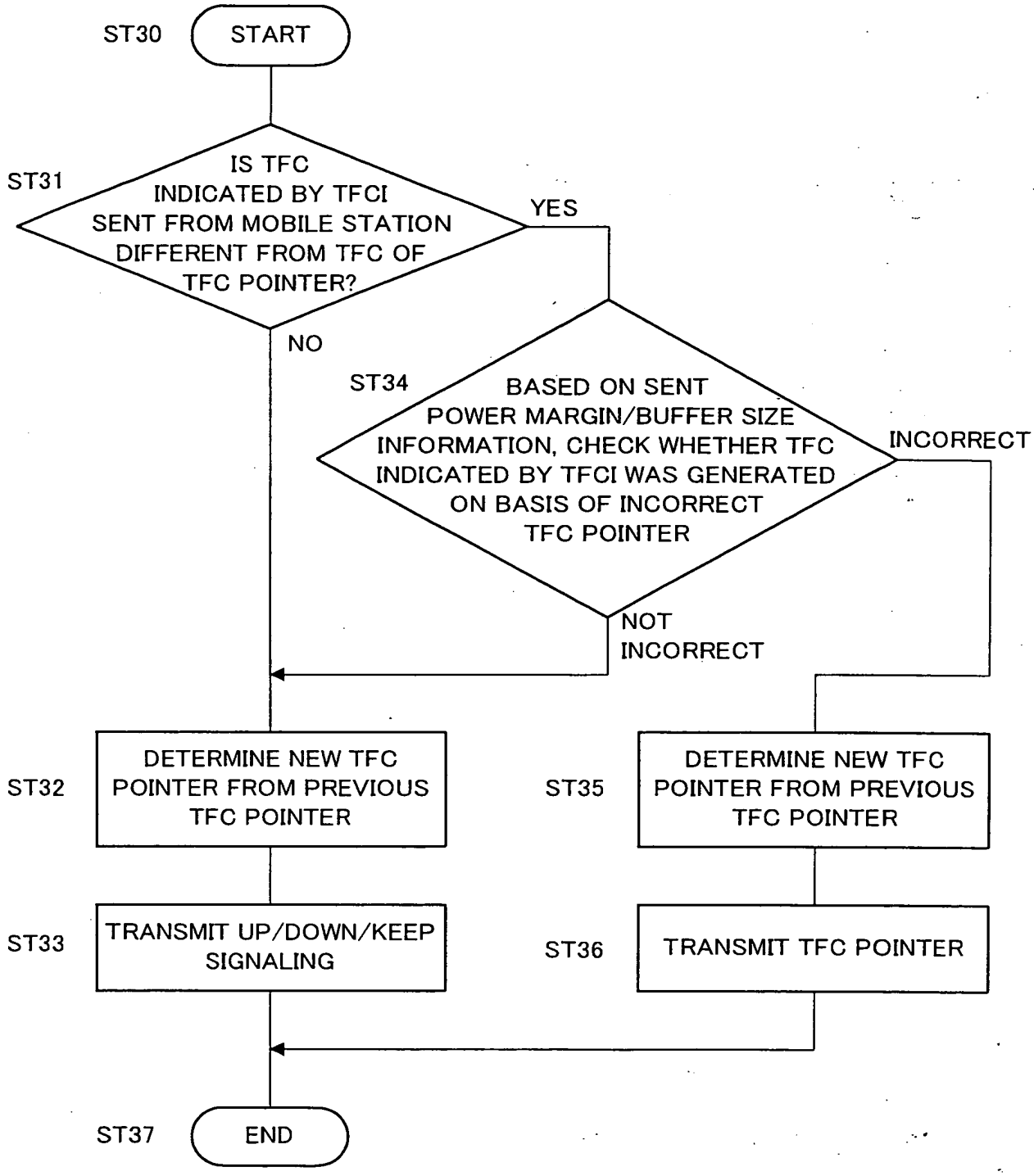

ST30
START
ST31
IS TFC INDICATED BY TFCI SENT FROM MOBILE STATION DIFFERENT FROM TFC OF TFC POINTER?
YES
NO
ST34
BASED ON SENT POWER MARGIN/BUFFER SIZE INFORMATION, CHECK WHETHER TFC INDICATED BY TFCI WAS GENERATED ON BASIS OF INCORRECT TFC POINTER
INCORRECT
NOT INCORRECT
ST32
DETERMINE NEW TFC POINTER FROM PREVIOUS TFC POINTER
ST35
DETERMINE NEW TFC POINTER FROM PREVIOUS TFC POINTER
ST33
TRANSMIT UP/DOWN/KEEP SIGNALING
ST36
TRANSMIT TFC POINTER
ST37
END

FIG.18

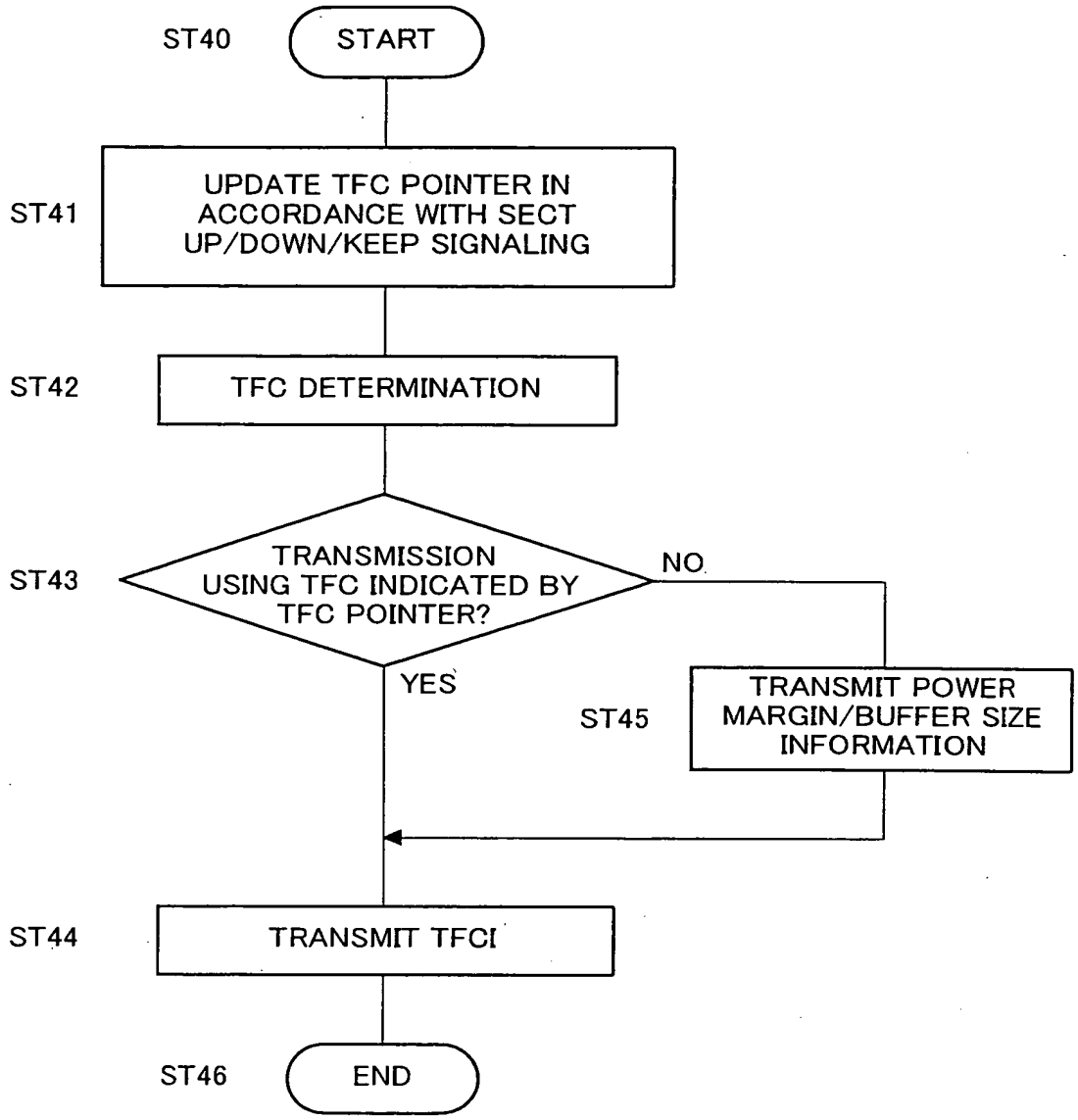

ST40
START
ST41
UPDATE TFC POINTER IN ACCORDANCE WITH SECT UP/DOWN/KEEP SIGNALING
ST42
TFC DETERMINATION
ST43
TRANSMISSION USING TFC INDICATED BY TFC POINTER?
NO
YES
ST45
TRANSMIT POWER MARGIN/BUFFER SIZE INFORMATION
ST44
TRANSMIT TFCI
ST46
END

FIG.19

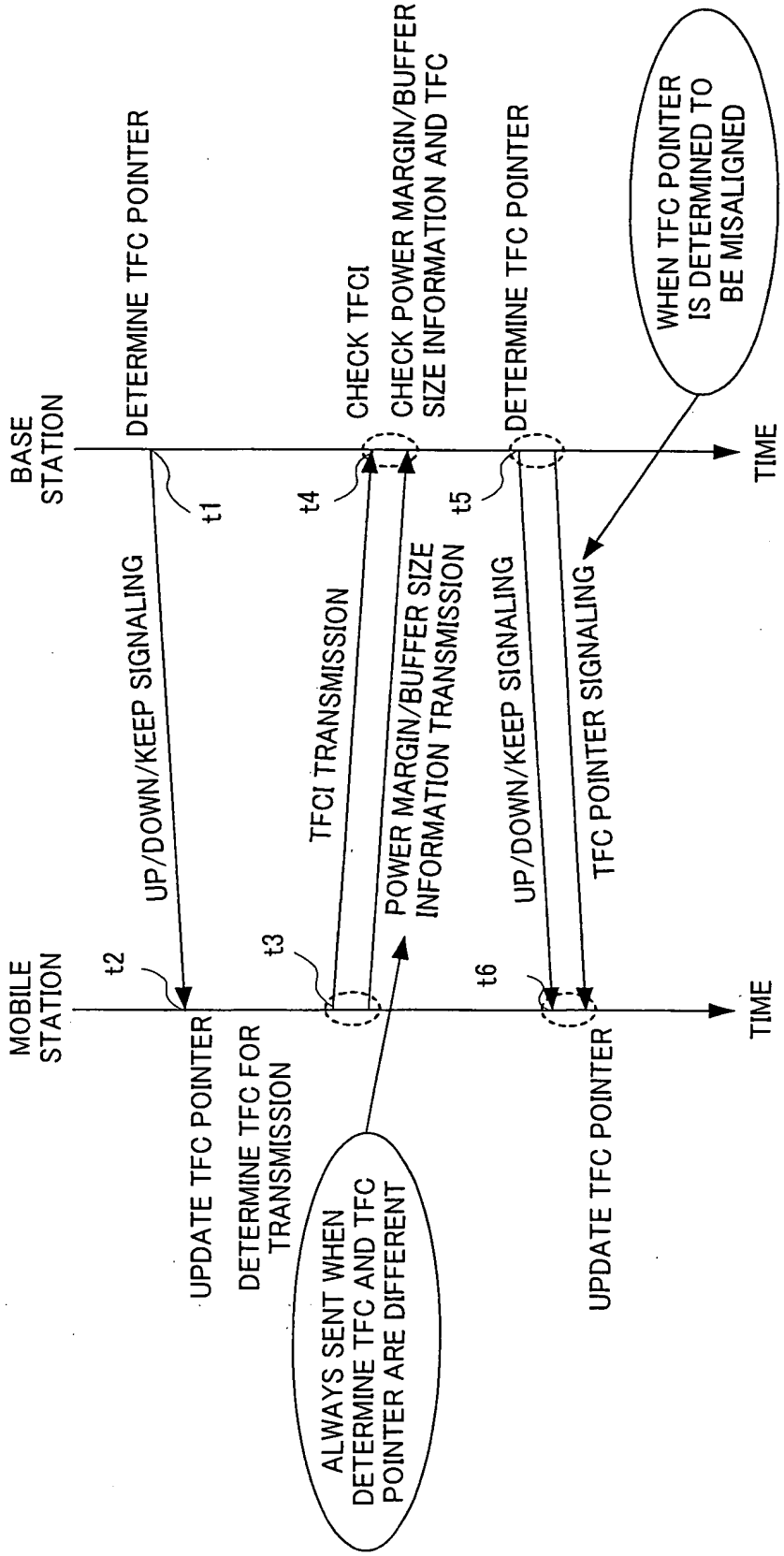

BASE STATION
MOBILE STATION
DETERMINE TFC POINTER
UP/DOWN/KEEP SIGNALING
UPDATE TFC POINTER
DETERMINE TFC FOR TRANSMISSION
TFCI TRANSMISSION
CHECK TFCI
POWER MARGIN/BUFFER SIZE INFORMATION TRANSMISSION
CHECK POWER MARGIN/BUFFER SIZE INFORMATION AND TFC
DETERMINE TFC POINTER
UP/DOWN/KEEP SIGNALING
TFC POINTER SIGNALING
UPDATE TFC POINTER
WHEN TFC POINTER IS DETERMINED TO BE MISALIGNED
ALWAYS SENT WHEN DETERMINE TFC AND TFC POINTER ARE DIFFERENT
t1
t2
t3
t4
t5
t6
TIME
TIME

FIG.20

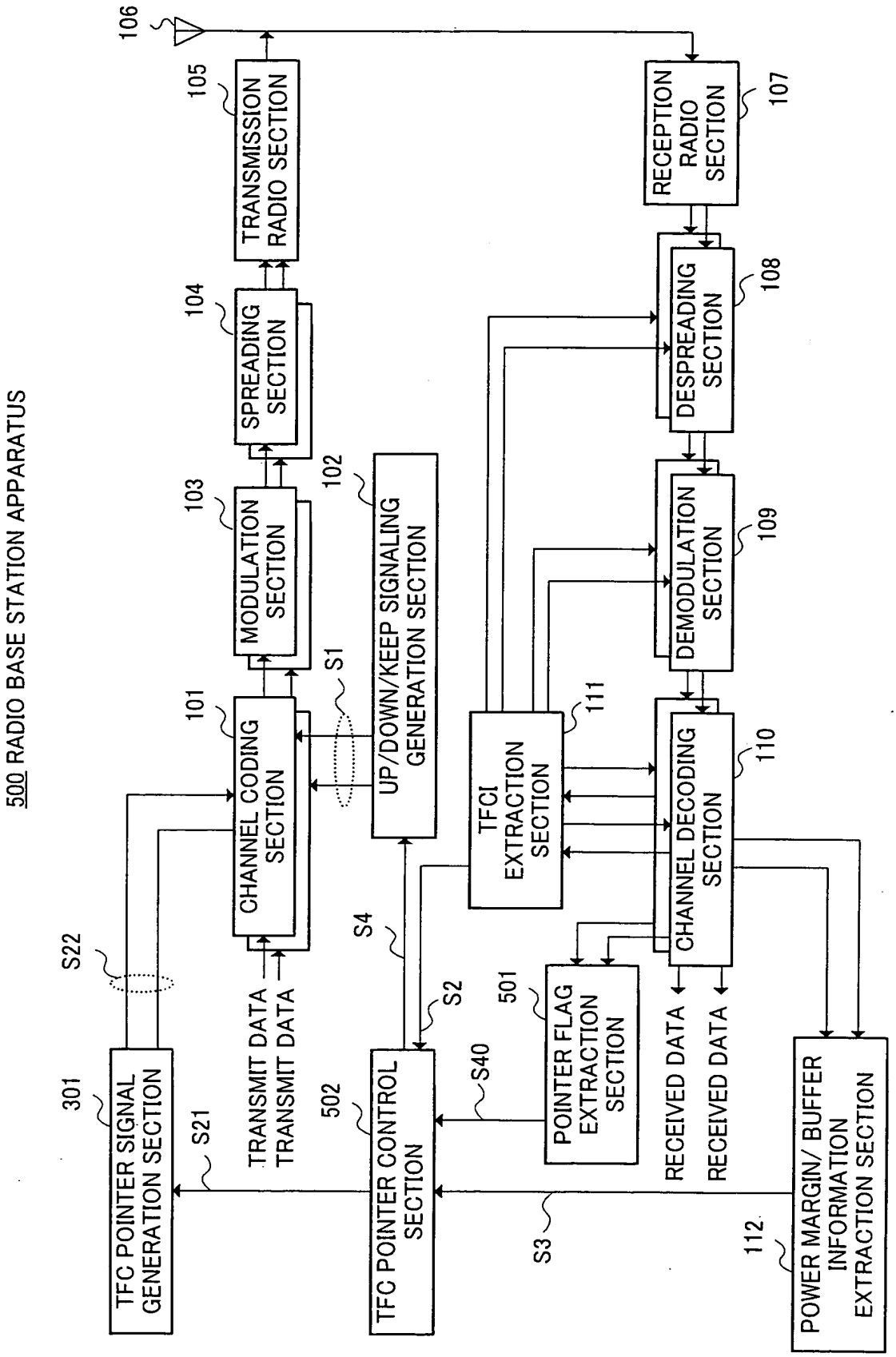

500 RADIO BASE STATION APPARATUS
106
105
TRANSMISSION RADIO SECTION
RECEPTION RADIO SECTION
107
104
SPREADING SECTION
DESPREADING SECTION
108
103
MODULATION SECTION
102
UP/DOWN/KEEP SIGNALING GENERATION SECTION
DEMODULATION SECTION
109
101
CHANNEL CODING SECTION
S1
TFCI EXTRACTION SECTION
111
CHANNEL DECODING SECTION
110
S22
S4
S2
501
TRANSMIT DATA
TRANSMIT DATA
POINTER FLAG EXTRACTION SECTION
RECEIVED DATA
RECEIVED DATA
301
S21
502
S40
TFC POINTER SIGNAL GENERATION SECTION
TFC POINTER CONTROL SECTION
S3
112
POWER MARGIN/ BUFFER INFORMATION EXTRACTION SECTION

FIG.21

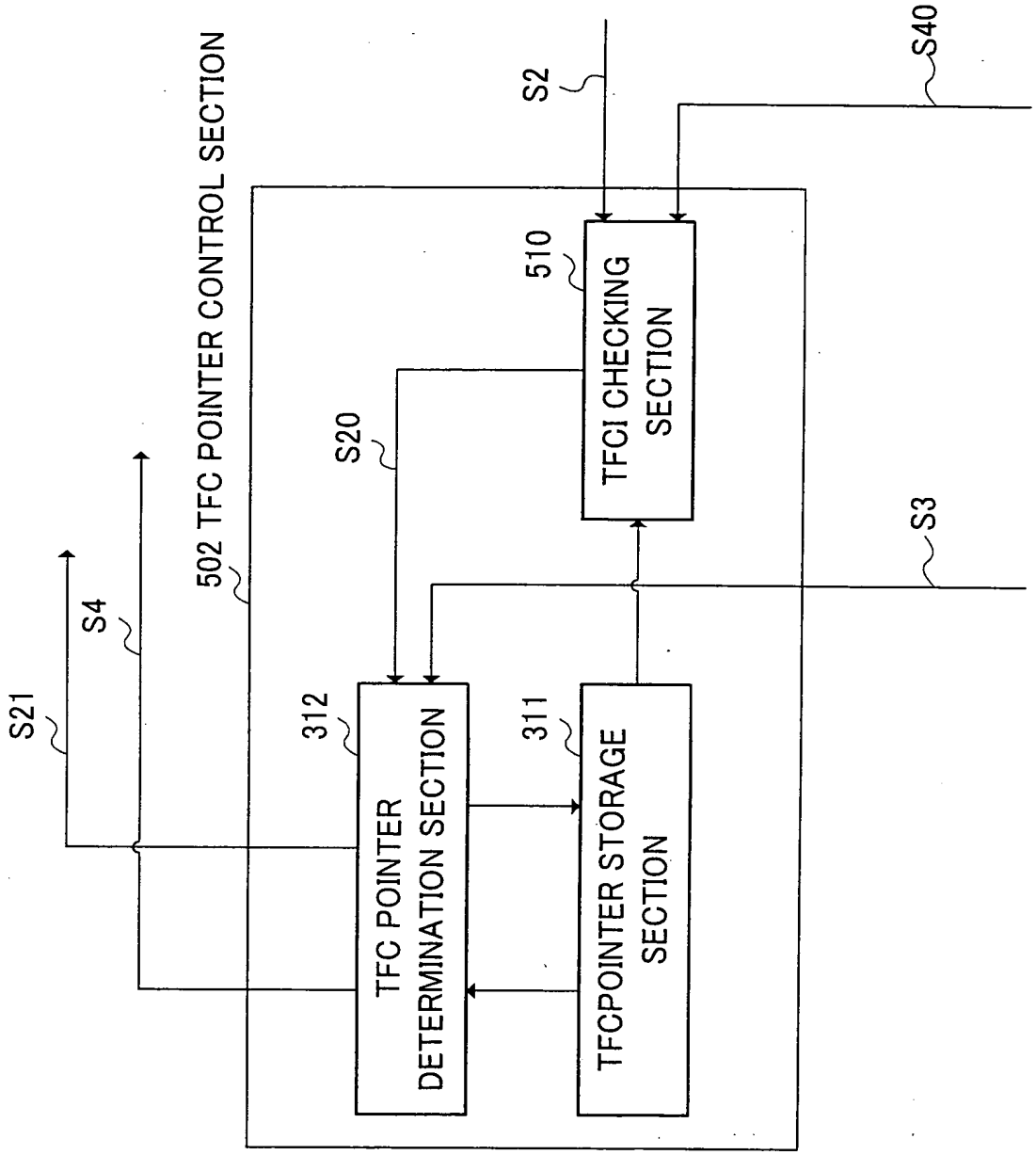

502 TFC POINTER CONTROL SECTION
S2
S40
510
TFCI CHECKING SECTION
S20
S3
S4
S21
312
TFC POINTER DETERMINATION SECTION
311
TFCPOINTER STORAGE SECTION

FIG.22

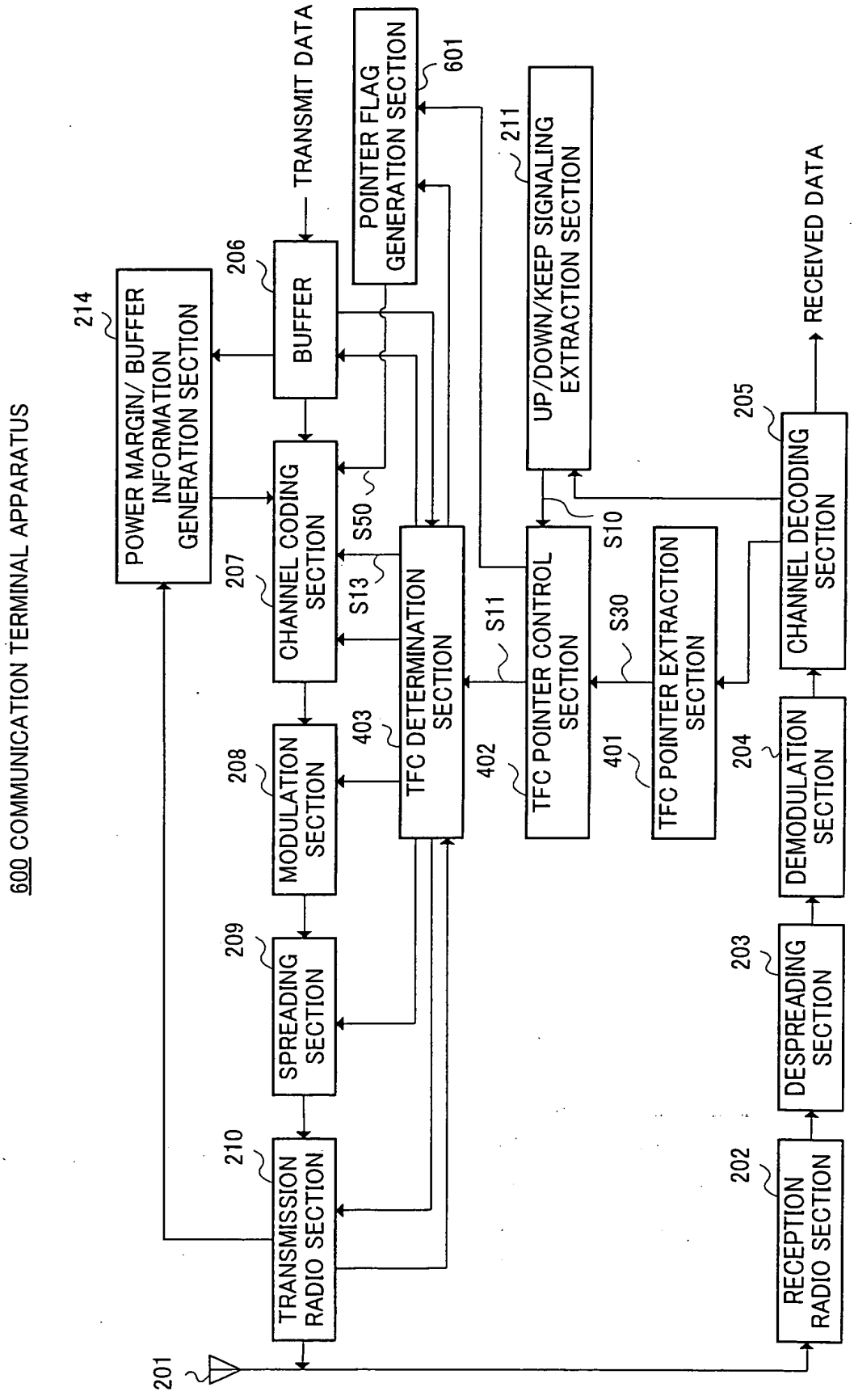

600 COMMUNICATION TERMINAL APPARATUS
TRANSMIT DATA
RECEIVED DATA
214
POWER MARGIN/ BUFFER INFORMATION GENERATION SECTION
206
BUFFER
601
POINTER FLAG GENERATION SECTION
211
UP/DOWN/KEEP SIGNALING EXTRACTION SECTION
207
CHANNEL CODING SECTION
S50
S13
403
TFC DETERMINATION SECTION
S11
402
TFC POINTER CONTROL SECTION
S10
S30
401
TFC POINTER EXTRACTION SECTION
205
CHANNEL DECODING SECTION
208
MODULATION SECTION
204
DEMODULATION SECTION
209
SPREADING SECTION
203
DESPREADING SECTION
210
TRANSMISSION RADIO SECTION
202
RECEPTION RADIO SECTION
201

FIG.23

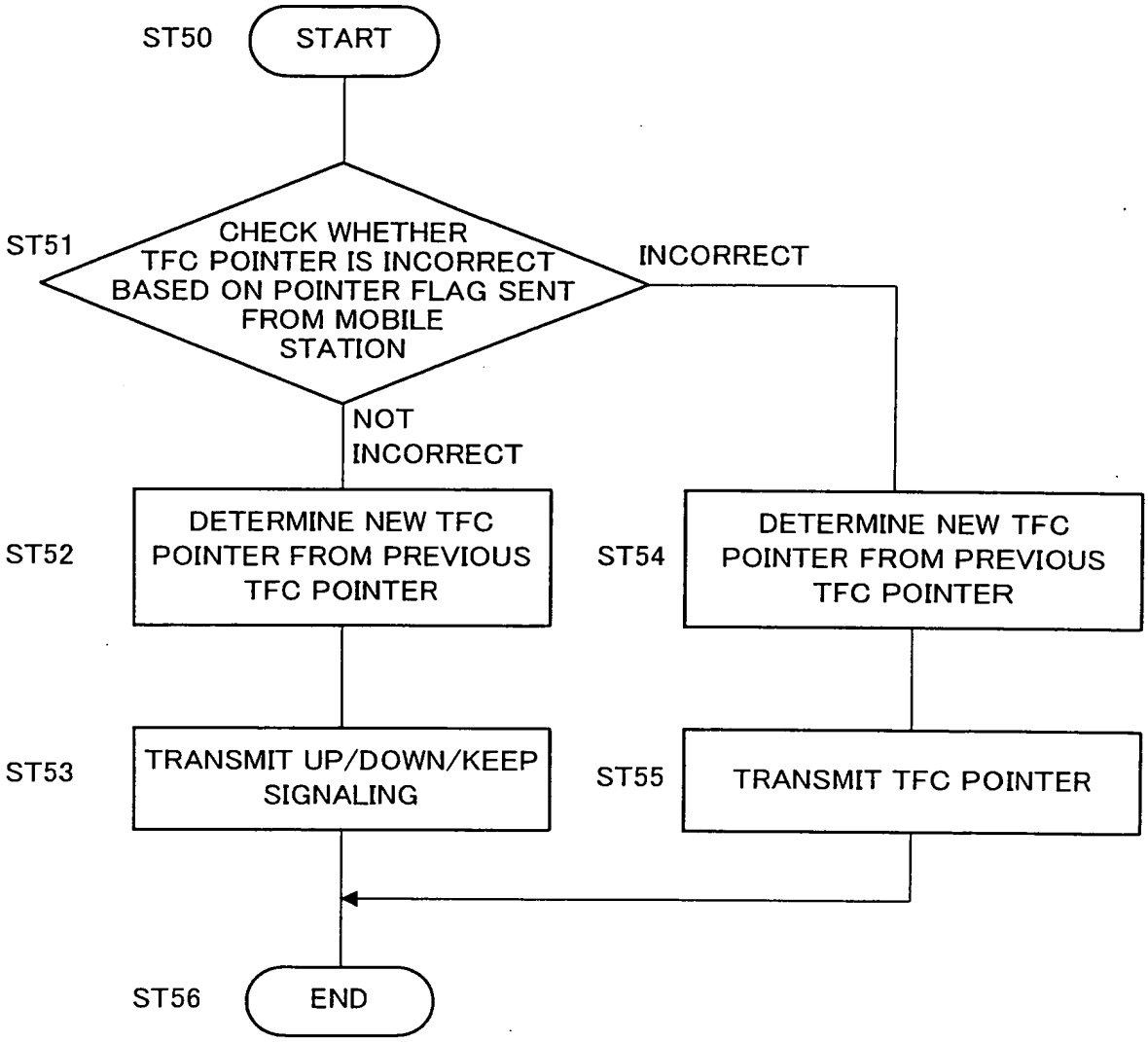

ST50
START
ST51
CHECK WHETHER TFC POINTER IS INCORRECT BASED ON POINTER FLAG SENT FROM MOBILE STATION
INCORRECT
NOT INCORRECT
ST52
DETERMINE NEW TFC POINTER FROM PREVIOUS TFC POINTER
ST53
TRANSMIT UP/DOWN/KEEP SIGNALING
ST54
DETERMINE NEW TFC POINTER FROM PREVIOUS TFC POINTER
ST55
TRANSMIT TFC POINTER
ST56
END

FIG.24

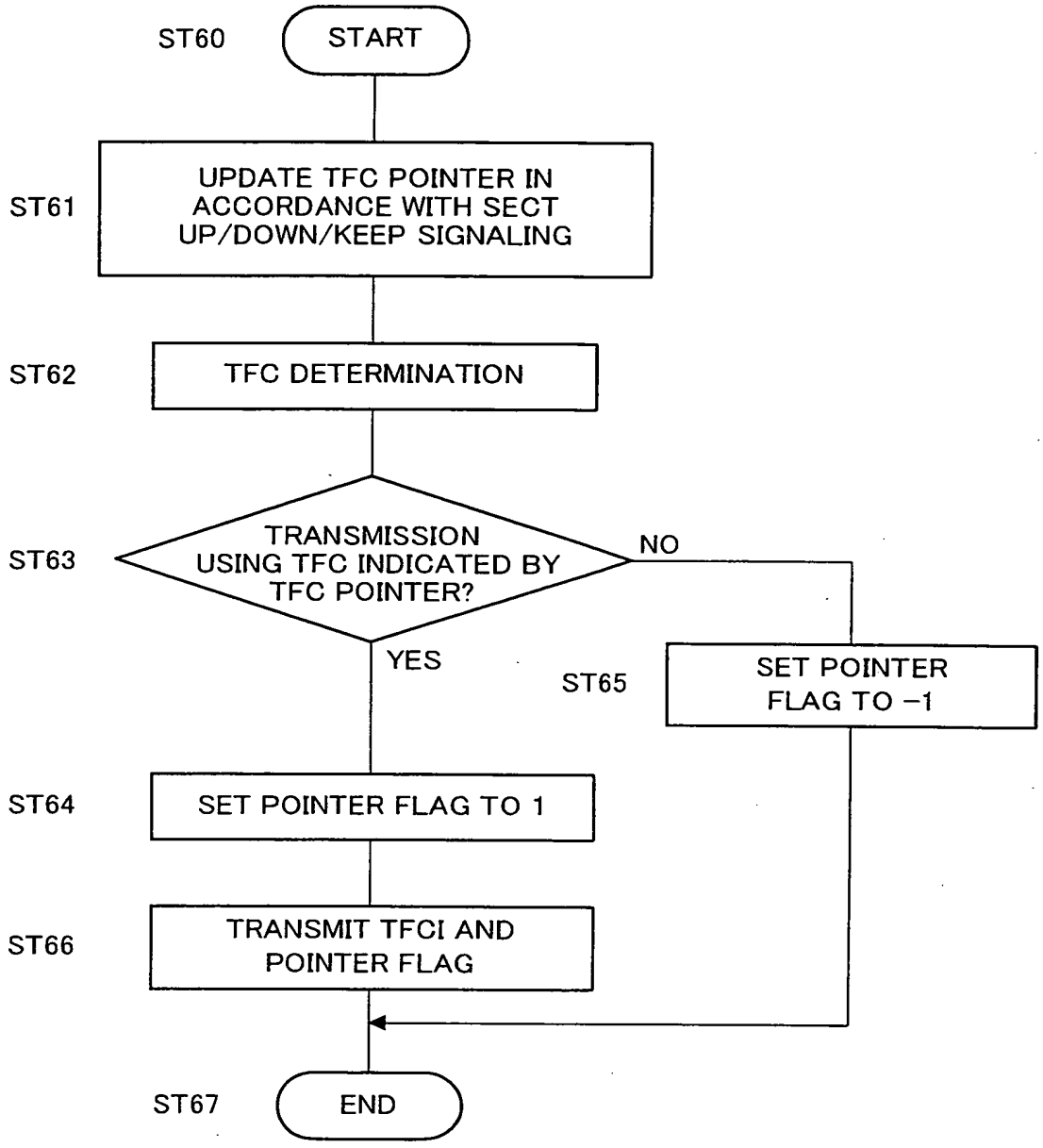

ST60
START
ST61
UPDATE TFC POINTER IN ACCORDANCE WITH SECT UP/DOWN/KEEP SIGNALING
ST62
TFC DETERMINATION
ST63
TRANSMISSION USING TFC INDICATED BY TFC POINTER?
NO
YES
ST65
SET POINTER FLAG TO −1
ST64
SET POINTER FLAG TO 1
ST66
TRANSMIT TFCI AND POINTER FLAG
ST67
END

FIG.25

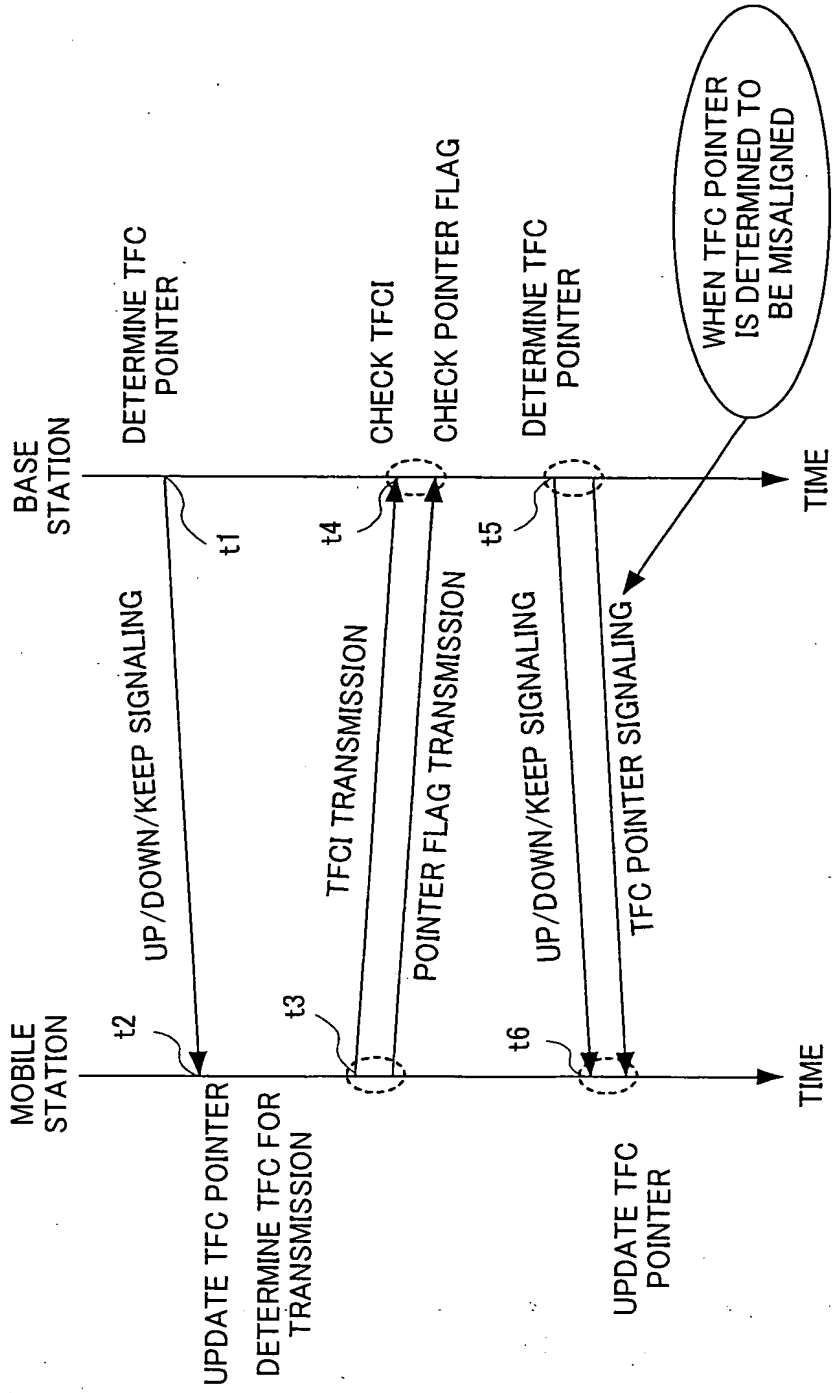

BASE STATION
MOBILE STATION
TIME
TIME
DETERMINE TFC POINTER
UP/DOWN/KEEP SIGNALING
t1
t2
UPDATE TFC POINTER
DETERMINE TFC FOR TRANSMISSION
t3
TFCI TRANSMISSION
t4
CHECK TFCI
POINTER FLAG TRANSMISSION
CHECK POINTER FLAG
t5
DETERMINE TFC POINTER
UP/DOWN/KEEP SIGNALING
t6
TFC POINTER SIGNALING
UPDATE TFC POINTER
WHEN TFC POINTER IS DETERMINED TO BE MISALIGNED

FIG.26